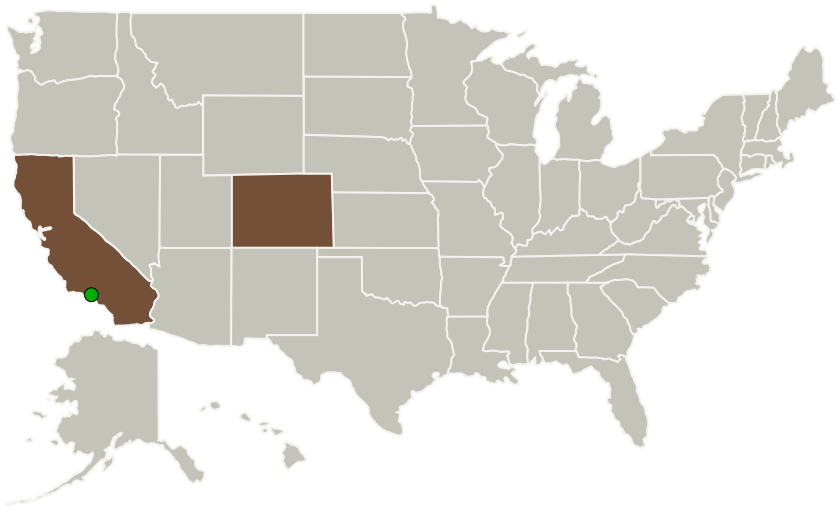
High Power Uplink Amplifier for Deep Space Communications, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

Critical to the success of delivering on the promise of deep space optical communications is the creation of a stable and reliable high power multichannel optical uplink/beacon. Optical Engines proposes to demonstrate in phase 1 a 1kW compact and low cost fiber amplifier suited to the uplink application. This will be accomplished through the use of Optical Engines proprietary Multi-Fiber Coupled 2.5kW laser diode stacks, its Etched Taper All Fiber Combiner Technology and a custom designed Photonic Crystal Fiber. By building upon existing fiber amplifier work this demonstration can be accomplished in the Phase 1 time frame. From this demonstration, a 4 channel 4kW total power amplifier array will be constructed during phase II to be integrated into existing NASA deep space communications up link infrastructure.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Optical Engines, Inc.	Lead Organization	Industry	Colorado Springs, Colorado
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

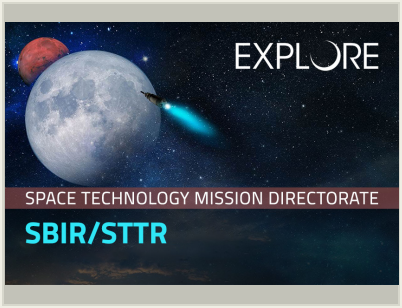


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Table of Contents

High Power Uplink Amplifier for Deep Space Communications, Phase I

Completed Technology Project (2010 - 2010)

Primary U.S. Work Locations	
California	Colorado

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139967)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Optical Engines, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Donald L Sipes

Co-Investigator:

Donald Sipes

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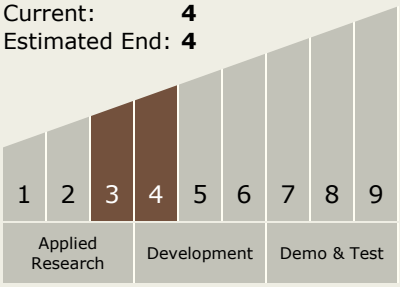
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.1 Optical Communications
    - TX05.1.1 Detector Development

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System